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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/644,545 | 08/20/2003 | David J. Love | TI-35080 | 6572 |
| 23494 | 7590 | 12/14/2006 | EXAMINER | |
| TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265 | | | CORRIELUS, JEAN B | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2611 | |

DATE MAILED: 12/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/644,545 | Applicant(s) LOVE ET AL. | |
| | Examiner Jean B. Corrielus | Art Unit 2611 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 1-13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it is too short. Correction is required. See MPEP § 608.01(b).

Drawings

2. The drawings are objected to because Fig. 3, "hierarchical" is mistyped as "Heirarchical". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

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3. Claims 1-13 are objected to because of the following informalities: claim 1, line 3, "a" should be deleted before signal because "vectors" is plural; lines 8-9 recites "to obtain ... the estimated transmitted multidimensional symbol S" however it is noted that "the estimated transmitted multidimensional symbol S has been previously generated in line 4 using a sub-optimal decoder. The limitation "using the reduce search V" should be inserted so as to provide proper antecedent basis for subsequent recitation in claim 5, lines 1-2. Please correct. Claim 2 is awkwardly written the same can be improved if amended as follow:

"2. (Amended) The method according to claim 1 wherein the step of generating a reduced search space V comprising generating the reduced search space V by minimizing some metric d." in addition the claim needs to define "metric d".

Claim 3, the claim needs to define "metric d". Claim 4, line 3, "a signal vector" should be replaced by "said signal vectors" so as to be consistent with antecedent in line 1; line 3, "into a" should be replaced by "into said" so as to make use of antecedent in claim 1. In addition, line 3, "comprises" should be replaced by "further comprising"; line 4, "said" should be inserted before "soft" so as to make use of antecedent in claim 1. Claim 5 recites " decoding the received signal vectors $y_1 \dots y_k$ via minimum distance decoding using the reduced search spaced v and generating the multidimensional symbol S" is redundant and should be deleted.

Claim 6, line 4, "an estimated" should replaced by "said estimated" and before "symbol", "multidimensional" should be inserted.

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Claim 7, lines 1-2 recites the step of receiving signal vectors " $y_1 \dots y_k$ into an unordered linear decoder" however, it is noted that claim 1 does not include such a limitation; line 3, "said" should be inserted before "signal"; line 4, "a" should be replaced by "said" and "an" by "said"; line 4, before "symbol", "multidimensional" should be inserted.

Claim 9 recites that a linear decoder consists of ... a matched filter receiver" however; it is not known that the matched filter can be a decoder.

Claim 11, please define H_k and H_n ; last line, "vectors" should be inserted after "symbol". Claim 12, "received vector" should be "received symbol vectors" for consistency.

Claim 13, line 2, after "symbol", "vectors" should be inserted; line 3, please define " V_k " and " V_L " please expand "ML". What does it mean by "returning a set V_k to H_k "? and last line, "a" should be replaced by "said". Note that any claim whose base claim is objected is likewise objected. Appropriate correction is required.

4. Claims 1-13 would be allowable if amended to overcome the objection set forth above.

5. This application is in condition for allowance except for the formal matters noted above.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

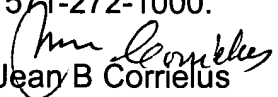
A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Jean B Corrielus
Primary Examiner
Art Unit 2611

12-11-06